

JUDGES' RETIREMENT SYSTEM  
OF ILLINOIS

ACTUARIAL VALUATION  
AS OF JUNE 30, 1996

**GOLDSTEIN & ASSOCIATES**  
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October 2, 1996

Board of Trustees  
Judges' Retirement System of Illinois  
2101 South Veterans Parkway  
P.O. Box 19255  
Springfield, Illinois 62794

Re: Actuarial Valuation as of June 30, 1996

Dear Board Members:

I am pleased to submit our actuarial report on the financial position and funding requirements of the Judges' Retirement System of Illinois based on the actuarial valuation as of June 30, 1996.

The report consists of 13 Sections and 2 Appendices as follows:

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I would be pleased to discuss any aspects of this report with you and other interested persons.

Respectfully submitted,



Sandor Goldstein  
Fellow of the Society of Actuaries  
Enrolled Actuary No. 96-3402

A. PURPOSE AND SUMMARY

We have carried out an actuarial valuation of the Judges' Retirement System of Illinois as of June 30, 1996. The purpose of the valuation was to determine the financial position and funding requirements of the retirement system. This report is intended to present the results of the valuation. The results are summarized below:

1. Total actuarial liability	\$577,792,256
2. Actuarial value of assets	232,432,993
3. Unfunded actuarial liability	345,359,263
4. Funded Ratio	40.2%
5. State contribution requirement for FY 98 under Public Act 88-0593	\$ 15,664,000
6. Actuarial present value of credited projected benefits	\$577,792,256

B. DATA USED FOR THE VALUATION

Participant Data. The participant data required to carry out the valuation was supplied by the retirement system. The membership of the system as of June 30, 1996, on which the valuation was based, is summarized in Exhibit 1. It can be seen that there were 866 active members, 444 members receiving retirement annuities, and 275 members receiving survivor's annuities included in the valuation. The total active payroll as of June 30, 1996 was \$90,005,011.

Exhibit 1

Summary of Membership Data

1. Number of Members	
(a) Active Members	
(i) Vested	576
(ii) Non-vested	290
(b) Members Receiving	
(i) Retirement Annuities	444
(ii) Survivor's Annuities	275
(c) Inactive Members	35
2. Annual Salaries (Active Members)	
(a) Total Salary	\$ 90,005,011
(b) Average Salary	103,932
3. Total Accumulated Employee Contributions of Active Members	\$ 71,463,189
4. Annual Annuity Payments	
(a) Retirement Annuities	\$ 26,663,634
(b) Survivor's Annuities	7,202,660

Assets. The asset value used for the valuation was based on the asset information contained in the statement of assets as of June 30, 1996 prepared by the system. For purposes of the valuation, the book value of the assets of the system (assets valued at cost), less the amount of liabilities, was used. The resulting actuarial value of assets was \$232,432,993. The development of this value is outlined in Exhibit 2.

Exhibit 2

Actuarial Value of Assets

1. Cash	\$ 4,267,254
2. Receivables	1,114,097
3. Investments - Held in the Illinois State Board of Investment Commingled Fund, at Cost	227,231,772
4. Equipment	8,237
5. Total Assets	\$232,621,360
6. Liabilities	188,367
7. Actuarial Value of Assets (5-6)	<u>\$232,432,993</u>

### C. RETIREMENT SYSTEM PROVISIONS

The actuarial valuation was based on the provisions of the retirement system in effect as of June 30, 1996 as provided in Article 18 of the Illinois Pension Code. There have been no changes in benefit provisions since the June 30, 1995 valuation. A summary of the principal provisions of the system in effect as of June 30, 1996 is provided in Appendix 1.

### D. ACTUARIAL ASSUMPTIONS AND COST METHOD

#### Actuarial Assumptions

The same actuarial assumptions that were used for the June 30, 1995 actuarial valuation were used for the June 30, 1996 actuarial valuation. These actuarial assumptions were based on an experience analysis of the system over the five-year period 1987-1992. The major actuarial assumptions used for the current valuation are summarized below:

Mortality Rates. The UP-1984 Mortality Table was used for the valuation.

Termination Rates. The following is a sample of the termination rates that were used:

<u>Age</u>	<u>Rate of Termination</u>
30	.066
35	.033
40	.013
45	.005
50	.003
55	.000

Disability Rates. The following is a sample of the disability rates that were used for the valuation:

<u>Age</u>	<u>Rate of Disability</u>
30	.00057
35	.00064
40	.00083
45	.00115
50	.00170
55	.00000

Retirement Rates. Rates of retirement for each age from 55 to 75 based on the recent experience of the system were used. The following are samples of the rates of retirement that were used:

<u>Age</u>	<u>Rate of Retirement</u>
55	.051
60	.127
65	.058
70	.104
75	1.000

The above retirement rates are equivalent to an average retirement age of approximately 66.

Salary Increase. A salary increase assumption of 6.0% per year, compounded annually, was used. This 6% salary increase assumption can be considered to consist of a general increase component of 5% per year, 4.5% of which is attributable to inflation, and a seniority/merit component of 1% per year.

Interest Rate. An interest rate assumption of 8.0% per year, compounded annually, was used. This interest rate assumption can be considered to consist of an inflation component of 4.5% per year and a real rate of return of 3.5% per year.

Marital Status. It was assumed that 75% of active members will be married at the time of retirement.

Spouse's Age. The age of the spouse was assumed to be 4 years younger than the age of the employee.

#### Actuarial Cost Method

The projected unit credit actuarial cost method was used for the June 30, 1996 valuation. Actuarial gains and losses are reflected in the unfunded actuarial liability. This is the same actuarial cost method that was used for the June 30, 1995 valuation.

#### **E. ACTUARIAL LIABILITY**

The actuarial liability as determined under the valuation for the various classes of members is summarized in Exhibit 3. The total actuarial liability is then compared with the actuarial value of assets in order to arrive at the unfunded actuarial liability. (The actuarial terms used in this report are defined in Appendix 2.)

As of June 30, 1996, the total actuarial liability is \$577,792,256, the actuarial value of assets is \$232,432,993, and the unfunded actuarial liability is \$345,359,263. The ratio of the actuarial value of assets to the actuarial liability, or funded ratio, is 40.2%.



Exhibit 3

Actuarial Liability As of June 30, 1996

1. Actuarial Liability For Active Members

(a) Basic retirement annuity	\$154,650,600
(b) Annual increase in retirement annuity	41,213,503
(c) Pre-retirement survivor's annuity	34,544,160
(d) Post-retirement survivor's annuity	19,348,019
(e) Withdrawal benefits	1,244,442
(f) Disability benefits	<u>1,599,454</u>
(g) Total	\$252,600,178

2. Actuarial Liability For Members Receiving Benefits

(a) Retirement annuities	\$255,803,549
(b) Survivor annuities	<u>57,742,840</u>
(c) Total	\$313,546,389

3. Actuarial Liability For Inactive Members

11,645,689

4. Total Actuarial Liability

\$577,792,256

5. Actuarial Value of Assets

\$232,432,993

6. Unfunded Actuarial Liability

\$345,359,263

7. Funded Ratio

40.2%

F. EMPLOYER'S NORMAL COST

The employer's share of the normal cost for the year beginning July 1, 1996 is developed in Exhibit 4. For the year beginning July 1, 1996, the total normal cost is determined to be \$24,254,640. Employee contributions are estimated to be \$9,900,551. The resulting employer's share of the normal cost is \$14,354,089.

Based on a payroll of \$90,005,011, the employer's share of the normal cost can be expressed as 15.95% of payroll.

Exhibit 4

Employer's Normal Cost For Year Beginning July 1, 1996

	<u>Dollar Amount</u>	<u>Percent of Payroll</u>
1. Basic retirement annuity	\$14,448,760	16.05%
2. Annual increase in retirement annuity	3,894,170	4.33
3. Pre-retirement survivor's annuity	3,615,351	4.02
4. Post-retirement survivor's annuity	1,629,707	1.81
5. Withdrawal benefits	179,805	.20
6. Disability benefits	165,807	.18
7. Administrative expenses	321,040	.36
8. Total normal cost	\$24,254,640	26.95%
9. Employee contributions	9,900,551	11.00
10. Employer's share of normal cost	<u>\$14,354,089</u>	<u>15.95%</u>

Note. The above figures are based on total active payroll of \$90,005,011 as of June 30, 1996.

G. LEVEL DOLLAR EXPENSE REQUIREMENT UNDER APB OPINION NO. 8

Accounting Principles Board Opinion No. 8, Accounting for the Costs of Pension Plans (APB Opinion No. 8) established certain standards for determining an employer's annual expense requirement under a pension plan. The minimum requirement for amortizing the unfunded liability specified under APB Opinion No. 8 is a 40-year amortization period and level dollar annual payments. The expense requirement under APB Opinion No. 8 for the year beginning July 1, 1996 is determined as follows:

	<u>Annual Amount</u>	<u>Percent of Payroll</u>
Employer's normal cost	\$14,354,089	15.95%
Annual amount to amortize the unfunded actuarial liability over 40 years through level dollar payments	<u>27,772,555</u>	<u>30.85</u>
Total expense requirement	<u>\$42,126,644</u>	<u>46.80%</u>

### Expense Requirement For Fiscal Year Ended June 30, 1996

Based on the results of our June 30, 1995 actuarial valuation and payroll of \$82,926,085 as of June 30, 1995, we have determined the minimum pension expense for Fiscal Year 1996 under APB Opinion No. 8 to be \$37,711,076, or 45.48% of covered payroll.

### H. STATE CONTRIBUTION REQUIREMENTS

Senate Bill 533, which was signed into law on August 22, 1994 as Public Act 88-0593, enacted the following funding plan for the system:

For fiscal years 2011 through 2045, the minimum State contribution to the system for each fiscal year shall be an amount determined by the system to be sufficient to bring the total assets of the system up to 90% of the total actuarial liabilities by the end of fiscal year 2045. In making these determinations, the required State contribution shall be calculated as a level percentage of payroll over the years through 2045. For fiscal years 1996 through 2010, the State contribution, as a percentage of the applicable payroll shall be increased in equal annual increments so that by fiscal year 2011, the State is contributing at the required rate.

Based on the June 30, 1996 actuarial valuation, we have determined the required State contributions under this plan for fiscal year 1998. We have also estimated required contributions for fiscal years 1999 through 2002 as well as for fiscal years 2005 and 2010. In determining the required State contribution for FY 1998,

the book value of assets was used. In order to comply with the requirements of GASB Statement No. 25, the market value of assets was used in determining the required State contributions for FY 1999 and later. The required State contribution rates and amounts are as follows:

<u>Fiscal Year</u>	<u>Projected Payroll</u>	<u>Required State Contribution as a Percent of Payroll</u>	<u>Required State Contribution as a Dollar Amount</u>
1998	\$ 94,626,000	16.55%	\$ 15,664,000
1999	99,669,000	17.64	17,581,000
2000	105,287,000	18.73	19,719,000
2001	112,147,000	19.82	22,226,000
2002	119,120,000	20.91	24,906,000
2005	140,997,000	24.18	34,088,000
2010	184,298,000	26.62	54,597,000

#### Method of Calculation

The contribution requirements shown above have been determined using the actuarial assumptions, membership data and benefit provisions that were used for the regular actuarial valuation. However, in order to determine the contribution requirements, certain calculations needed to be made that are not normally required in a regular actuarial valuation. Benefit payout requirements, normal costs, and payroll were estimated over the 49-year period from 1997 through 2045 by projecting the membership of the system over the 49-year period, taking into account the impact of new entrants to the system over the 49-year period.

In order to make the required projections, assumptions needed to be made regarding the age and salary distribution of new entrants as well as the size of the active membership of the system. The assumptions regarding the profile of

new entrants to the system was based on the recent experience of the system with regard to new entrants. The size of the active membership of the system was assumed to remain constant over the 49-year projection period.

I. ANNUAL REQUIRED CONTRIBUTION FOR GASB STATEMENT NO. 25

GASB Statement No. 25 requires the disclosure of the annual required employer contribution (ARC), calculated in accordance with certain parameters. Based on the results of the June 30, 1995 and June 30, 1996 actuarial valuations, we have therefore calculated the annual required contribution for the fiscal years ending on June 30, 1997 and June 30, 1998. In accordance with the parameters prescribed in GASB Statement No. 25, in calculating the annual required contribution, we have used market value for the actuarial value of assets and have used a 40-year level percent of payroll amortization of the unfunded liability. On this basis, the annual required contribution for Fiscal Years 1997 and 1998 have been determined to be as follows:

	<u>Fiscal Year 1997</u>	<u>Fiscal Year 1998</u>
1. Employer's normal cost	\$13,467,965	\$15,092,923
2. Annual amount to amortize the unfunded liability over 40 years as a level percent of payroll	<u>12,553,974</u>	<u>13,774,701</u>
3. Annual required contribution (1+2)	<u>\$26,021,939</u>	<u>\$28,867,624</u>

J. RECONCILIATION OF CHANGE IN UNFUNDED LIABILITY

The net actuarial experience during the period July 1, 1995 to June 30, 1996 resulted in an increase in the system's unfunded actuarial liability of

\$35,777,659. This increase in unfunded liability is a result of several kinds of gains and losses as illustrated in Exhibit 5.

The employer funding requirement for the year of normal cost plus interest on the unfunded actuarial liability amounted to \$36,647,236, whereas the actual employer contribution for the year amounted to \$12,129,000. Thus, the employer contribution for the year fell short of meeting normal cost plus interest on the unfunded liability by \$24,518,236. Had all aspects of the system's experience been in line with the actuarial assumptions, the unfunded liability would have increased by this amount.

The net rate of investment return earned by the net assets of the system, based on assets valued at cost, was approximately 14.6% in comparison with the assumed rate of investment return of 8.0%. This resulted in a decrease in the unfunded liability of \$13,671,404. Salaries increased at an average rate of approximately 10.0%, in comparison with an assumed rate of 6.0%, resulting in an increase in the unfunded liability of \$9,999,484.

The various other aspects of the system's experience resulted in a net increase in the unfunded liability of \$14,931,343.

The aggregate financial experience of the system resulted in an increase in the unfunded liability of \$35,777,659.

Exhibit 5

Reconciliation of Change in Unfunded Liability  
Over the Period July 1, 1995 to June 30, 1996

1. Unfunded actuarial liability as of 7/1/95	\$309,581,604
2. Employer contribution requirement of normal cost plus interest on the unfunded liability for the period 7/1/95 to 6/30/96	36,647,236
3. Actual employer contribution for the year	<u>12,129,000</u>
4. Increase in unfunded liability due to employer contributions being less than normal cost plus interest on unfunded liability	24,518,236
5. Decrease in unfunded liability due to investment return on net assets higher than assumed	13,671,404
6. Increase in unfunded liability due to salary increases higher than assumed	9,999,484
7. Increase in unfunded liability due to other sources	<u>14,931,343</u>
8. Net increase in unfunded liability for the year (4-5+6+7)	<u>\$ 35,777,659</u>
9. Unfunded actuarial liability as of 6/30/96 (1+9)	<u>\$345,359,263</u>

K. ACTUARIAL PRESENT VALUE OF CREDITED PROJECTED BENEFITS

Governmental Accounting Standards Board (GASB) Statement No. 5, entitled Disclosure of Pension Information by Public Employee Retirement Systems and State and Local Governmental Employers, establishes standards of disclosure of pension information by public employee retirement systems.

GASB Statement No. 5 requires the disclosure of the actuarial present value of credited projected benefits as the standardized measure of the accrued pension

obligation. This measure represents the discounted value of the amount of benefits estimated to be payable in the future as a result of employee service to date, computed by attributing an equal benefit amount to each year of service of the employee.

In Exhibit 6, we have shown the actuarial present value of credited projected benefits in the format prescribed in GASB Statement No. 5. It can be seen that the total actuarial present value of credited projected benefits of \$577,792,256 is the same as the total actuarial liability under the projected unit credit actuarial cost method.

Exhibit 6

Actuarial Present Value of Credited Projected Benefits

1. For members in receipt of benefits and for inactive members	\$325,192,078
2. For current employees	
Accumulated employee contributions	71,463,189
Employer-financed vested	104,447,078
Employer-financed non-vested	<u>76,689,911</u>
3. Total actuarial present value of credited projected benefits	<u>\$577,792,256</u>
4. Net assets available for benefits, at cost (Market value is \$277,098,999)	<u>\$232,432,993</u>
5. Unfunded actuarial present value of credited projected benefits	<u>\$345,359,263</u>



L. PROJECTION OF BENEFITS, CONTRIBUTIONS, AND LIABILITIES

Based on the results of the June 30, 1996 valuation and using the actuarial assumptions used for the valuation, we have projected valuation results for a 49-year period commencing with Fiscal Year 1997. We have based State contributions on the contribution requirements in the funding plan established under Public Act 88-0593. In order to comply with the requirements of GASB Statement No. 25, the method used to determine the actuarial value of assets will be changed from book value to market value commencing with the June 30, 1997 actuarial valuation. In performing our projections, we have taken into account this planned change in the asset valuation method. The results of our projections are shown in Exhibit 7.

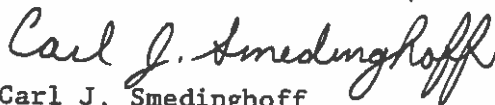
M. CERTIFICATION

This actuarial report has been prepared in accordance with generally accepted actuarial principles and practices and to the best of our knowledge, fairly represents the financial condition of the Judges' Retirement System of Illinois as of June 30, 1996.

Respectfully submitted,



Sandor Goldstein  
Fellow of the Society of Actuaries  
Enrolled Actuary 96-3402



Carl J. Smedinghoff  
Associate of the Society of Actuaries

## EXHIBIT 7

JUDGES' RETIREMENT SYSTEM OF ILLINOIS  
PROJECTION OF COSTS, BENEFITS, AND LIABILITIES  
(State Contributions Are Based on Public Act 88-0593)  
(All Dollar Amounts in Millions)

		Fiscal Year Ending 6/30					
		1997	1998	1999	2000	2001	2002
<u>BASIC DATA</u>							
1. Number of Active Members	866		866	866	866	866	866
2. Expected Total Payroll	\$ 90.0	\$ 94.6	\$ 99.7	\$ 105.3	\$ 112.1	\$ 119.1	
<u>VALUATION RESULTS</u>							
3. Actuarial Liability (Retired Lives Reserve)	\$602.5 (308.2)	\$630.5 (322.5)	\$661.7 (338.5)	\$696.3 (356.2)	\$735.1 (376.0)	\$777.9 (397.9)	
4. Assets (Market Value)	\$278.8	\$282.7	\$288.7	\$297.2	\$309.2	\$324.7	
5. Unfunded Actuarial Liability (Funded Percentage)	\$323.7 ( 46.3)	\$347.8 ( 44.8)	\$373.0 ( 43.6)	\$399.1 ( 42.7)	\$425.9 ( 42.1)	\$453.2 ( 41.7)	
6. Annual Normal Cost							
(a) Total	\$ 24.3	\$ 26.1	\$ 27.7	\$ 29.4	\$ 31.4	\$ 33.2	
(b) Employee Contributions	9.9	10.4	11.0	11.6	12.3	13.1	
(c) Employer's Share	14.4	15.7	16.7	17.8	19.1	20.1	
(% of Total Payroll)	(15.95)	(16.55)	(16.80)	(16.94)	(17.01)	(16.91)	
7. State Contribution (% of Total Payroll)	\$ 13.7 (15.27)	\$ 15.7 (16.55)	\$ 17.6 (17.64)	\$ 19.7 (18.73)	\$ 22.2 (19.82)	\$ 24.9 (20.91)	
8. Estimated Total Expenses (Benefits, Refunds and Administrative Expenses)	\$ 36.7	\$ 37.9	\$ 39.2	\$ 40.8	\$ 42.1	\$ 43.8	
9. Accumulated Contributions (Actives and Inactives)	\$ 78.3	\$ 82.5	\$ 87.1	\$ 92.8	\$ 98.5	\$ 104.4	

Note: In determining State contributions for FY 1997 and FY 1998, book value of assets was used. In determining State contributions for FY 1999 and later, market value of assets was used.

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## EXHIBIT 7 (CONTINUED)

JUDGES' RETIREMENT SYSTEM OF ILLINOIS  
PROJECTION OF COSTS, BENEFITS, AND LIABILITIES  
(State Contributions Are Based on Public Act 88-0593)  
(All Dollar Amounts in Millions)

		Fiscal Year Ending 6/30			
		2005	2010	2020	2045
<u>BASIC DATA</u>					
1. Number of Active Members	866		866	866	866
2. Expected Total Payroll	\$141.0		\$184.3	\$304.5	\$1,033.7
<u>VALUATION RESULTS</u>					
3. Actuarial Liability (Retired Lives Reserve)	\$931.7 (476.5)		\$1,275.7 (652.4)	\$2,268.9 (1,160.5)	\$3,728.1 (1,906.9)
4. Assets (Market Value)	\$394.8		\$607.6	\$1,355.2	\$2,598.5
5. Unfunded Actuarial Liability (Funded Percentage)	\$536.9 ( 42.4)		\$668.1 ( 47.6)	\$ 913.7 ( 59.7)	\$1,129.6 ( 69.7)
6. Annual Normal Cost					
(a) Total	\$ 39.4		\$ 50.8	\$ 84.1	\$292.0
(b) Employee Contributions	15.5		20.3	33.5	113.7
(c) Employer's Share (% of Total Payroll)	23.9 (16.93)		30.5 (16.55)	50.6 (16.62)	178.3 (17.25)
7. State Contribution (% of Total Payroll)	\$ 34.1 (24.18)		\$ 54.6 (29.62)	\$ 90.2 (29.62)	\$306.2 (29.62)
8. Estimated Total Expenses (Benefits, Refunds and Administrative Expenses)	\$ 50.4		\$ 66.7	\$132.5	\$488.3
9. Accumulated Contributions (Actives and Inactives)	\$123.1		\$160.6	\$264.5	\$898.0

Note: In determining State contributions for FY 1997 and FY 1998, book value of assets was used. In determining State contributions for FY 1999 and later, market value of assets was used.

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## Appendix 1

### Summary of Principal Provisions

1. Participation. Participation in the system is mandatory when a person first becomes a judge, unless an "Election Not to Participate" is filed by the judge within 30 days of the date of notification of this option.

2. Member Contributions. All members of the system are required to contribute to the system the following percentage of their salaries:

Retirement Annuity	7.5%
Automatic Annuity Increase	1.0
Survivor's Annuity	<u>2.5</u>
Total	11.0%

All judges who become participants after December 31, 1992 are required to make contributions toward the survivor's annuity unless they file an election not to participate in the survivor's annuity benefit, in which case the total participant contribution rate is 8.5% of salary.

3. Discontinuance of Contributions. A participant who becomes eligible to receive the maximum rate of annuity may elect to discontinue contributions and have his or her benefits "fixed" based upon the final rate of salary immediately prior to the effective date of such election. This election, once made, is irrevocable.

4. Retirement Annuity - Eligibility. A judge who has at least 10 years of service may retire with an unreduced retirement annuity upon attainment of age 60. A judge with at least 6 years of service may retire with an unreduced retirement annuity upon attainment of age 62.

A judge with at least 10 years of service may retire upon attainment of age 55, with the amount of the retirement annuity reduced 1/2 of 1% for each month that the judge is under age 60. However, the reduction does not apply if the judge has at least 28 years of service.

5. Retirement Annuity - Amount. The retirement annuity is determined according to the following formula based upon the final rate of salary:

- 3 1/2% for each of the first 10 years of service; plus
- 5% for each year of service in excess of 10

The maximum retirement annuity is 85% of the final rate of salary.

6. Automatic Increase In Retirement Annuity. Annual automatic increases of 3% of the current amount of retirement annuity are provided. The initial increase is effective in the month of January of the year next following the year in which the first anniversary of retirement occurs.

7. Temporary Total Disability. A member with at least 2 years of service who becomes totally disabled and unable to perform his or her duties as a judge is entitled to a temporary disability benefit equal to 50% of salary payable during the period of disability but not beyond the end of the term of office.

8. Total and Permanent Disability. A member with at least 10 years of service who becomes totally and permanently disabled while serving as a judge is eligible to commence receiving his or her retirement annuity without reduction regardless of age.

9. Survivor's Annuity - Participation and Eligibility. A married judge, an unmarried judge who becomes a participant after December 31, 1992, or a judge who marries after becoming a participant is subject to the provisions relating to the survivor's annuity unless he or she files a written notice of election not to participate in the survivor's annuity.

An active judge who is not contributing for the survivor's annuity and later marries or remarries may receive partial credit for the survivor's annuity thereby providing a prorated benefit for his or her spouse by contributing to the survivor's annuity benefit prospectively from the date of marriage.

A surviving spouse without children is eligible for survivor benefits at age 50 or over provided marriage to the member had been in effect for at least 1 year immediately prior to the member's death.

A surviving spouse with unmarried eligible children of the member is eligible for a survivor's annuity benefit at any age provided the above marriage requirements have been met. When all children are disqualified because of death, marriage or attainment of age 18, or age 22 in the case of a full-time student, the spouse's benefit is suspended if the spouse is under age 50 until the attainment of such age.

Remarriage prior to the attainment of age 50 shall disqualify a surviving spouse for the receipt of a survivor's annuity.

Children of the member who are under age 18 or under age 22 and a full-time student or who are over age 18 and dependent because of a physical or mental disability are eligible for survivor benefits.

If the member dies in service as a judge, the member must have at least 1 1/2 years of service credit for survivor's annuity eligibility. If death occurs after termination of service, the deceased member must have at least 10 years of service credit for survivor's annuity eligibility.

10. Survivor's Annuity - Amount. (a) Upon the death of an annuitant, his or her surviving spouse shall be entitled to a survivor's annuity of 66 2/3% of the annuity the annuitant was receiving immediately prior to his or her death.

(b) Upon the death of a judge while in service, the surviving spouse shall receive a survivor's annuity of 66 2/3% of the annuity earned by the judge as of the date of death, or 7 1/2% of the judge's last salary, whichever is greater.

(c) Upon the death of a former judge who had terminated service with at least 10 years of service, his or her surviving spouse shall be entitled to a survivor's annuity of  $66 \frac{2}{3}\%$  of the annuity earned by the deceased member as of the date of death.

(d) Upon the death of an annuitant, a judge in service, or a former judge who had terminated service with at least 10 years of service, each surviving child unmarried and under the age of 18, or age 22 in the case of a full-time student, or disabled shall be entitled to a child's annuity in an amount equal to 5% of the decedent's final salary, not to exceed in total for all such children the greater of 20% of final salary or  $66 \frac{2}{3}\%$  of the earned retirement annuity.

(e) Survivor's annuities are subject to annual automatic increases of 3% of the current amount of annuity.

11. Refund of Contributions. A participant who ceases to be a judge may apply for and receive a refund of his or her total contributions to the system, provided he or she is not then eligible to receive a retirement annuity.

A participant who becomes unmarried, either before or after retirement, is entitled to a refund of contributions made for the survivor's annuity.

## Appendix 2

### Glossary of Terms used in Report

1. Actuarial Present Value. The value of an amount or series of amounts payable at various times, determined as of a given date by the application of a particular set of actuarial assumptions.
2. Actuarial Cost Method or Funding Method. A procedure for determining the actuarial present value of pension plan benefits and for determining an actuarially equivalent allocation of such value to time periods, usually in the form of a normal cost and an actuarial accrued liability.
3. Normal Cost. That portion of the actuarial present value of pension plan benefits which is allocated to a valuation year by the actuarial cost method.
4. Actuarial Liability or Accrued Liability. That portion, as determined by a particular actuarial cost method, of the actuarial present value of pension benefits which is not provided for by future normal costs.
5. Actuarial Value of Assets. The value assigned by the actuary to the assets of the pension plan for purposes of an actuarial valuation.
6. Unfunded Actuarial Liability. The excess of the actuarial liability over the actuarial value of assets.
7. Projected Unit Credit Actuarial Cost Method. A cost method under which the projected benefits of each individual included in an actuarial valuation are allocated by a consistent formula to valuation years. The actuarial present value of benefits allocated to a valuation year is called the normal cost. The actuarial present value of benefits allocated to all periods prior to a valuation year is called the actuarial liability.  
  
Under this method, the actuarial gains (losses), as they occur, generally reduce (increase) the unfunded actuarial liability.
8. Actuarial Assumptions. Assumptions as to future events affecting pension costs.
9. Actuarial Valuation. The determination, as of a valuation date, of the normal cost, actuarial liability, actuarial value of assets, and related actuarial present values for a pension plan.

JUNE 30, 1996  
VALUATION

Judges' Retirement System  
Funding Projections to end of 2045 - Market Value of Assets Starting 6/30/97

Year	No. of Active Members	Retired		Actuarial		Unfunded		Funded	Total Normal Cost	Employer's		ERNC As % of Payroll	State		Estimated Benefit Payout	Accumulated Contributions
		Lives Reserve	Assets	Liability	Ratio	Normal Cost	Employee Contributions			Normal Cost	Contribution As % of Pay		State Contribution			
1997	866	308.2	278.8	323.7	46.3%	24.3	9.9	14.4	15.95%	13.7	36.7	78.3				
1998	866	322.5	282.7	347.8	44.8%	26.1	10.4	15.7	16.55%	15.7	37.9	82.5				
1999	866	338.5	288.7	373.0	43.6%	27.7	11.0	16.7	16.80%	17.6	39.2	87.1				
2000	866	356.2	297.2	399.1	42.7%	29.4	11.6	17.8	16.94%	19.7	40.8	92.8				
2001	866	376.0	309.2	425.9	42.1%	31.4	12.3	19.1	17.01%	22.2	42.1	98.5				
2002	866	397.9	324.7	453.2	41.7%	33.2	13.1	20.1	16.91%	24.9	43.8	104.4				
2003	866	421.9	344.0	480.9	41.7%	35.3	13.9	21.4	16.96%	27.8	45.7	110.2				
2004	866	448.0	367.2	508.8	41.9%	37.2	14.6	22.6	16.93%	30.7	48.0	116.6				
2005	866	476.5	394.8	536.9	42.4%	39.4	15.5	23.9	16.93%	34.1	50.4	123.1				
2006	866	507.2	427.1	564.7	43.1%	41.5	16.4	25.1	16.88%	37.6	53.1	129.8				
2007	866	540.2	464.2	592.1	43.9%	43.7	17.3	26.4	16.86%	41.4	56.4	137.0				
2008	866	575.4	506.4	618.8	45.0%	46.0	18.2	27.8	16.76%	45.5	59.3	144.6				
2009	866	612.8	554.1	644.2	46.2%	48.3	19.2	29.1	16.64%	49.9	62.8	152.5				
2010	866	652.4	607.6	668.1	47.6%	50.8	20.3	30.5	16.55%	54.6	66.7	160.6				
2011	866	694.1	665.0	692.2	49.0%	53.3	21.3	32.0	16.46%	57.5	71.1	168.8				
2012	866	737.7	725.9	716.5	50.3%	55.9	22.4	33.5	16.39%	60.4	76.2	177.9				
2013	866	783.3	790.8	740.8	51.6%	58.7	23.6	35.1	16.32%	63.7	81.6	187.1				
2014	866	831.1	859.6	765.4	52.9%	61.8	24.9	36.9	16.33%	67.0	87.3	196.9				
2015	866	881.1	932.6	790.0	54.1%	65.0	26.2	38.8	16.33%	70.5	93.4	206.8				
2016	866	932.9	1,009.3	814.6	55.3%	68.3	27.5	40.8	16.30%	74.1	100.5	217.1				
2017	866	966.7	1,089.7	839.4	56.5%	71.9	28.9	43.0	16.39%	77.8	107.9	228.0				
2018	866	1,042.4	1,173.8	864.2	57.6%	75.7	30.3	45.4	16.46%	81.6	115.9	239.8				
2019	866	1,100.3	1,262.3	888.9	58.7%	79.8	31.9	47.9	16.53%	85.9	124.0	251.9				
2020	866	1,160.5	1,355.2	913.7	59.7%	84.1	33.5	50.6	16.62%	90.2	132.5	264.5				
2021	866	1,222.9	1,452.7	938.1	60.8%	88.5	35.2	53.3	16.69%	94.7	141.6	277.7				
2022	866	1,287.6	1,555.0	962.4	61.8%	93.3	36.9	56.4	16.80%	99.4	150.9	291.3				
2023	866	1,354.7	1,662.2	986.3	62.8%	98.2	38.7	59.5	16.89%	104.3	160.9	305.7				
2024	866	1,424.2	1,774.6	1,009.8	63.7%	103.4	40.6	62.8	16.99%	109.4	171.2	321.4				
2025	866	1,496.6	1,893.3	1,032.7	64.7%	109.0	42.7	66.3	17.06%	115.1	181.5	337.1				
2026	866	1,571.8	2,018.3	1,054.7	65.7%	114.6	44.8	69.8	17.13%	120.7	192.5	353.7				
2027	866	1,650.0	2,150.2	1,075.8	66.7%	120.6	47.0	73.6	17.21%	126.7	203.7	371.3				
2028	866	1,731.6	2,289.9	1,095.5	67.6%	126.9	49.4	77.5	17.27%	133.0	215.1	390.7				
2029	866	1,817.1	2,439.0	1,113.6	68.7%	133.5	51.9	81.6	17.28%	139.9	226.3	410.6				
2030	866	1,906.9	2,598.5	1,129.6	69.7%	140.5	54.6	85.9	17.30%	147.0	237.7	430.7				
2031	866	2,000.8	2,768.3	1,143.3	70.8%	147.4	57.3	90.1	17.32%	154.2	250.0	452.9				
2032	866	2,099.5	2,950.3	1,154.3	71.9%	155.0	60.2	94.8	17.31%	162.2	262.3	475.6				
2033	866	2,203.1	3,145.2	1,161.9	73.0%	162.7	63.2	99.5	17.31%	170.3	275.2	499.7				
2034	866	2,312.1	3,354.2	1,165.9	74.2%	170.9	66.4	104.5	17.29%	178.9	288.5	525.0				
2035	866	2,426.7	3,578.6	1,165.6	75.4%	179.4	69.8	109.6	17.27%	188.0	302.4	551.1				
2036	866	2,547.1	3,819.0	1,160.5	76.7%	188.2	73.3	114.9	17.25%	197.3	317.1	579.0				
2037	866	2,673.7	4,077.1	1,149.9	78.0%	197.7	77.0	120.7	17.25%	207.3	332.5	607.9				
2038	866	2,806.7	4,353.9	1,133.2	79.3%	207.6	80.8	126.8	17.25%	217.7	348.6	638.4				
2039	866	2,946.5	4,650.9	1,109.5	80.7%	218.0	84.9	133.1	17.25%	228.6	365.6	670.3				
2040	866	3,093.4	4,969.4	1,078.2	82.2%	228.9	89.1	139.8	17.25%	240.0	383.5	703.8				
2041	866	3,247.7	5,311.0	1,038.3	83.6%	240.3	93.6	146.7	17.25%	252.0	402.4	738.9				
2042	866	3,409.8	5,677.5	988.8	85.2%	252.3	98.3	154.0	17.25%	264.6	422.2	775.9				
2043	866	3,599.2	6,070.6	928.6	86.7%	264.9	103.2	161.7	17.25%	277.8	443.1	814.6				
2044	866	3,759.0	6,492.3	856.6	88.3%	278.2	108.3	169.9	17.25%	291.7	465.1	855.2				
2045	866	3,946.8	6,944.5	771.5	90.0%	292.0	113.7	178.3	17.25%	306.2	488.3	898.0				



6/30/96  
VALUATION

Judges' Retirement System  
Funding Projections to End of 2045 - Assets Valued at Cost

Year	No. of Active Members	Payroll	Actuarial Liability	Retired Lives Reserve	Assets	Unfunded Liability	Funded Ratio	Total Normal Cost	Employee Contributions	Employer's Normal Cost	ERNC As % of Payroll	State Contribution As % of Pay	Estimated Benefit Payout	Accumulated Contributions
1997	866	90.0	602.5	308.2	230.6	371.9	38.3%	24.3	9.9	14.4	15.95%	13.7	36.7	78.3
1998	866	94.6	630.5	322.5	230.6	399.9	36.6%	26.1	10.4	15.7	16.55%	15.7	37.9	82.5
1999	866	99.7	661.7	338.5	232.7	429.0	35.2%	27.7	11.0	16.7	16.80%	17.8	39.2	87.1
2000	866	105.3	696.3	356.2	237.1	459.2	34.1%	29.4	11.6	17.8	16.94%	20.1	40.8	92.8
2001	866	112.1	735.1	376.0	245.0	490.1	33.3%	31.4	12.3	19.1	17.01%	22.9	42.1	98.5
2002	866	119.1	777.9	397.9	256.3	521.6	33.0%	33.2	13.1	20.1	16.91%	25.8	43.8	104.4
2003	866	126.2	824.9	421.9	271.4	553.5	32.9%	35.3	13.9	21.4	16.96%	29.0	45.7	110.2
2004	866	133.2	876.0	448.0	290.4	585.6	33.1%	37.2	14.6	22.6	16.93%	32.3	48.0	116.6
2005	866	141.0	931.7	476.5	313.9	617.8	33.7%	39.4	15.5	23.9	16.93%	36.0	50.4	123.1
2006	866	148.8	991.8	507.2	342.1	649.7	34.5%	41.5	16.4	25.1	16.88%	39.9	53.1	129.8
2007	866	156.9	1,056.3	540.2	375.2	681.1	35.5%	43.7	17.3	26.4	16.86%	44.1	56.4	137.0
2008	866	165.6	1,125.2	575.4	413.7	711.5	36.8%	46.0	18.2	27.8	16.76%	48.7	59.3	144.6
2009	866	174.8	1,198.3	612.8	457.9	740.4	38.2%	48.3	19.2	29.1	16.64%	53.6	62.8	152.5
2010	866	184.3	1,275.7	652.4	508.1	767.6	39.8%	50.8	20.3	30.5	16.55%	58.9	66.7	160.6
2011	866	194.1	1,357.2	694.1	562.3	794.9	41.4%	53.3	21.3	32.0	16.46%	62.0	71.1	168.8
2012	866	204.0	1,442.4	737.7	620.0	822.4	43.0%	55.9	22.4	33.5	16.39%	65.2	76.2	177.9
2013	866	215.0	1,531.6	783.3	681.5	850.1	44.5%	58.7	23.6	35.1	16.32%	68.7	81.6	187.1
2014	866	226.2	1,625.0	831.1	747.1	877.9	46.0%	61.8	24.9	36.9	16.33%	72.3	87.3	196.9
2015	866	238.0	1,722.6	881.1	817.0	905.6	47.4%	65.0	26.2	38.8	16.33%	76.1	93.4	206.8
2016	866	250.0	1,823.9	932.9	890.4	933.5	48.8%	68.3	27.5	40.8	16.30%	79.9	100.5	217.1
2017	866	262.5	1,929.1	986.7	967.7	961.4	50.2%	71.9	28.9	43.0	16.39%	83.9	107.9	228.0
2018	866	275.6	2,038.0	1,042.4	1,048.8	989.2	51.5%	75.7	30.3	45.4	16.46%	88.1	115.9	239.8
2019	866	289.8	2,151.2	1,100.3	1,134.3	1,016.9	52.7%	79.8	31.9	47.9	16.53%	92.6	124.0	251.9
2020	866	304.5	2,268.9	1,160.5	1,224.4	1,044.5	54.0%	84.1	33.5	50.6	16.62%	97.3	132.5	264.5
2021	866	319.7	2,390.8	1,222.9	1,319.1	1,071.7	55.2%	88.5	35.2	53.3	16.69%	102.2	141.6	277.7
2022	866	335.6	2,517.4	1,287.6	1,418.9	1,098.5	56.4%	93.3	36.9	56.4	16.80%	107.3	150.9	291.3
2023	866	352.1	2,648.5	1,354.7	1,523.7	1,124.8	57.5%	98.2	38.7	59.5	16.89%	112.5	160.9	305.7
2024	866	369.5	2,784.4	1,424.2	1,634.0	1,150.4	58.7%	103.4	40.6	62.8	16.99%	118.1	171.2	321.4
2025	866	388.5	2,926.0	1,496.6	1,751.0	1,175.0	59.8%	109.0	42.7	66.3	17.06%	124.2	181.5	337.1
2026	866	407.4	3,073.0	1,571.8	1,874.4	1,198.6	61.0%	114.6	44.8	69.8	17.13%	130.2	192.5	353.7
2027	866	427.6	3,226.0	1,650.0	2,005.2	1,220.8	62.2%	120.6	47.0	73.6	17.21%	136.7	203.7	371.3
2028	866	448.9	3,385.4	1,731.6	2,144.2	1,241.2	63.3%	126.9	49.4	77.5	17.27%	143.5	215.1	390.7
2029	866	472.2	3,552.6	1,817.1	2,293.1	1,259.5	64.5%	133.5	51.9	81.6	17.28%	150.9	226.3	410.6
2030	866	496.3	3,728.1	1,906.9	2,453.0	1,275.1	65.8%	140.5	54.6	85.9	17.30%	158.6	237.7	430.7
2031	866	520.6	3,911.6	2,000.8	2,623.8	1,287.8	67.1%	147.4	57.3	90.1	17.32%	166.4	250.0	452.9
2032	866	547.5	4,104.6	2,099.5	2,807.5	1,297.1	68.4%	155.0	60.2	94.8	17.31%	175.0	262.3	475.6
2033	866	574.8	4,307.1	2,203.1	3,004.9	1,302.2	69.8%	162.7	63.2	99.5	17.31%	183.7	275.2	499.7
2034	866	604.0	4,520.1	2,312.1	3,217.4	1,302.7	71.2%	170.9	66.4	104.5	17.29%	193.1	288.5	525.0
2035	866	634.6	4,744.2	2,426.7	3,446.3	1,297.9	72.6%	179.4	69.8	109.6	17.27%	202.8	302.4	551.1
2036	866	666.2	4,979.5	2,547.1	3,692.3	1,287.2	74.1%	188.2	73.3	114.9	17.25%	212.9	317.1	579.0
2037	866	699.8	5,227.0	2,673.7	3,957.2	1,269.8	75.7%	197.7	77.0	120.7	17.25%	223.7	332.5	607.9
2038	866	734.8	5,487.4	2,806.7	4,242.2	1,244.9	77.3%	207.6	80.8	126.8	17.25%	234.9	348.6	638.4
2039	866	771.7	5,760.4	2,946.5	4,549.1	1,211.3	79.0%	218.0	84.9	133.1	17.25%	246.6	365.6	670.3
2040	866	810.2	6,047.6	3,093.4	4,879.1	1,168.5	80.7%	228.9	89.1	139.8	17.25%	258.9	383.5	703.8
2041	866	850.7	6,349.3	3,247.7	5,234.2	1,115.1	82.4%	240.3	93.6	146.7	17.25%	271.9	402.4	738.9
2042	866	893.2	6,666.3	3,409.8	5,616.2	1,050.1	84.2%	252.3	98.3	154.0	17.25%	285.5	422.2	775.9
2043	866	937.8	6,999.2	3,580.1	6,027.2	972.0	86.1%	264.9	103.2	161.7	17.25%	298.7	443.1	814.6
2044	866	984.7	7,348.9	3,759.0	6,469.3	879.6	88.0%	278.2	108.3	169.9	17.25%	314.7	465.1	855.2
2045	866	1,033.7	7,716.0	3,946.8	6,944.8	771.2	90.0%	292.0	113.7	178.3	17.25%	330.4	488.3	898.0